



# RANDO<sup>®</sup> HD

## 10, 22, 32, 46, 68, 100, 150, 220, 320

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### PRODUCT DESCRIPTION

Rando<sup>®</sup> HD oils are formulated with premium base oil technology and designed to give robust protection to hydraulic pumps in mobile and stationary systems.

### CUSTOMER BENEFITS

Rando HD oils deliver value through:

- **Long equipment life** — Special antiwear additive package minimizes wear by protecting surfaces when load causes breakdown of the lubricant film.
- **Minimized downtime** — Effective rust and oxidation inhibitor system helps prevent the production of abrasive particles from rust formation, and deposits, varnishes and sludges from oil breakdown, which can damage equipment surfaces and seals, and block filters prematurely.
- **Smooth operation** — Good hydrolytic stability and water separation characteristics promote excellent filterability in the presence of water contamination. Good anti-foam and air release help ensure smooth operation and system efficiency.
- **Optimal oil service life** — High oxidation stability resists oil thickening and deposit formation in service, minimizing the possibility of an unscheduled change of hydraulic fluid.

### FEATURES

Rando HD **ISO 32, 46, and 68** are formulated with Group II base stocks.

Rando HD **ISO 100, 150, 220, and 320** are designed for lubricant applications requiring an AGMA R&O gear oil lubricant in the applicable viscosity grade.

Rando HD oils provide excellent:

- antiwear protection
- oxidation and corrosion inhibition
- foam and aeration suppression

Under moderate loads and temperatures, the high viscosity index of Rando HD oils help ensure good film strength between metal surfaces and is further enhanced by antiwear additive protection.

### APPLICATIONS

Rando HD **ISO 10 and 22** can be used as spindle lubricants where zinc-free oils are not a requirement.

Rando HD **ISO 32, 46, or 68** are recommended for:

- vane-, piston-, or gear-type pumps, especially where pressures exceed 1000 psi
- lightly loaded reciprocating compressors

Rando HD **ISO 100, 150, 220, or 320** are recommended for applications where AGMA rust and oxidation inhibited oils are required:

- hydraulic equipment reduction gears where EP is not required
- plain and antifriction bearings
- circulating oil systems

Rando HD oils are approved for:

- **Eaton-Vickers** 35VQ25A pump, M-2950-S (Mobile) and I-286-S (Stationary) (ISO 32, 46, 68)
- **Parker Hannifin (Denison)** HFO, HF1, HF2, T6H20C (ISO 32, 46, 68)

Product(s) manufactured in the USA, Colombia and El Salvador.

Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

A **Chevron** company product

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Rando® HD oils meet the requirements of:

- **AFNOR** NF E 48-603 HM (ISO 32, 46, 68)
- **ANSI/AGMA** 9005-EO2, *Industrial Gear Lubrication*, for gear lubrication as rust and oxidation inhibited gear oils (ISO 46, 68, 100, 150, 220)
- **ASTM** D6158 HM (ISO 32, 46, 68, 100, 150)
- **Bosch Rexroth** former specification RE 90220-01 (ISO 32, 46, 68)
- **DIN** 51524-2 (ISO 32, 46, 68)
- **General Motors** LS2 Specification, LH for anti-wear hydraulic fluids (ISO 32, 46, 68)
- **ISO** 11158 L-HM
- **Joy** HO-S (ISO 68)
- **MAG Cincinnati, Cincinnati Machine** P-68 (ISO 32), P-70 (ISO 46), P-69 (ISO 68)
- **US Steel** 126, 127 (ISO 32, 46, 68)

Rando HD **ISO 32, 46, 68, 100, 150, 220, and 320** are registered by **NSF** and are acceptable as lubricants where there is no possibility of food contact (H2) in and around food processing areas. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements of appropriate use, ingredient review and labeling verification.

Do not use in high pressure systems in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

Do not use in breathing air apparatus or medical equipment.

## TYPICAL TEST DATA

ISO Grade	10	22	32	46	68
Product Number	273252	273276	273277	273278	273279
MSDS Number					
USA	23706	23548	23556	23556	23556
Colombia	—	—	33476	33476	33476
El Salvador	—	—	33477	33477	33477
AGMA Grade	—	—	—	1	2
API Gravity	27.7	33.7	32.6	31.8	31.6
Viscosity, Kinematic					
cSt at 40°C	10.3	23.1	30.4	43.7	64.6
cSt at 100°C	2.5	4.4	5.2	6.5	8.4
Viscosity, Saybolt					
SUS at 100°F	63	120	157	225	334
SUS at 210°F	35	41	44	48	54
Viscosity Index	48	98	99	97	98
Flash Point, °C(°F)	154(309)	177(351)	220(428)	226(439)	235(455)
Pour Point, °C(°F)	-39(-38)	-36(-33)	-33(-27)	-30(-22)	-30(-22)
Oxidation Stability					
Hours to 2.0 mg KOH/g acid number, ASTM D943	—	—	>5000	>5000	>5000

Minor variations in product typical test data are to be expected in normal manufacturing.

Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

## TYPICAL TEST DATA

ISO Grade	100	150	220	320
<i>Product Number</i>	273228	273280	273281	277316
<i>MSDS Number</i>				
<i>USA</i>	23550	23550	23550	23550
<i>Colombia</i>	33474	33474	—	—
<i>El Salvador</i>	33475	33475	—	—
AGMA Grade	3	4	5	6
API Gravity	30.1	29.7	28.5	27.4
Viscosity, Kinematic				
cSt at 40°C	95.0	143	209	304
cSt at 100°C	11.0	14.2	18.2	23.4
Viscosity, Saybolt				
SUS at 100°F	495	751	1105	1617
SUS at 210°F	64	76	93	117
Viscosity Index	100	97	96	96
Flash Point, °C(°F)	250(482)	260(500)	271(520)	277(531)
Pour Point, °C(°F)	-15(+5)	-12(+10)	-12(+10)	-12(+10)
Oxidation Stability				
Hours to 2.0 mg KOH/g acid number, ASTM D943	>2000	>1500	>1000	>1000

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